

Visual Testing with PyCharm and pytest

Brian Okken & Paul Everitt

May 11, 2018

Who we are

Paul Everitt

PyCharm and WebStorm Developer Advocate at
JetBrains

Brian Okken

Author of “Python Testing with pytest”

Host of “Test & Code” podcast

Co-Host of “Python Bytes” podcast

Lead Software Engineer at Rohde & Schwarz

TDD, pytest, and
PyCharm

a lot of ground to cover

- TDD in 4 slides
- why pytest
- why PyCharm
- demo as much as we can



(courtesy <http://moonlander.seb.ly/>)

TDD

Design->Develop->Test

doesn't work

at least ... it's not fun

Test First

~~Design -> Develop -> Test~~

Test -> Design & Develop

TDD - traditional

- Red: Write a failing test
- Green: Make it pass
- Refactor: Clean up your code

TDD according to Brian

- Red: Learn what it's like to use your code
- Green: Learn one way to implement the code
- Refactor: Make code you are proud of

(and don't forget to refactor your tests, too)

Let's test
something

The cards project

```
$ cards add -o okken "Prepare for PyCon talk"
$ cards add -o okken "Order stickers"
$ cards add -o okken "Order business cards"
$ cards add -o okken "pack"
$ cards update 2 --done True
$ cards update 3 --done True
$ cards list
```

ID	owner	done	summary
1	okken		Prepare for PyCon talk
2	okken	x	Order stickers
3	okken	x	Order business cards
4	okken		pack

for those of you following along at home

```
$ git clone https://github.com/okken/cards.git
$ cd cards
$ python3.6 -m venv venv --prompt cards
$ source venv/bin/activate # venv\Scripts\activate (if
Windows)
(cards) $ pip install -r requirements_dev.txt
```

cards

src

cards

__init__.py

cardsdb.py

cli.py

tests

api

conftest.py

test_alac.py

test_list_filter.py

test_tracer_bullets.py

cli

__init__.py

conftest.py

test_alac.py

pytest in action

```
(cards) $ pytest --cov=src
===== test session starts =====
plugins: cov-2.5.1
collected 40 items

tests/api/test_alac.py . [ 2%]
tests/api/test_list_filter.py ..... [ 50%]
tests/api/test_tracer_bullets.py ..... [ 67%]
tests/cli/test_alac.py . [ 70%]
tests/cli/test_list_format.py ..... [ 85%]
tests/cli/test_tracer_bullets.py ..... [100%]

----- coverage: -----
Name                               Stmts   Miss Branch BrPart  Cover
-----
src/cards/  init.py                 2       0       0       0   100%
```

pytest allows you to run a subset of tests

```
$ # one directory  
$ pytest tests/cli
```

```
$ # one test module  
$ pytest tests/cli/test_tracer_bullets.py
```

```
$ # one test function  
$ pytest tests/cli/test_tracer_bullets.py::test_count
```

Some other ways to run a subset of tests

```
(cards) $ pytest --help
```

```
...
```

<code>-k EXPRESSION</code>	just tests matching this expression
<code>-m MARKEXP</code>	run tests w/ given mark expression
<code>-x, --exitfirst</code>	exit on first error/failed test
<code>--maxfail=num</code>	exit after first num failures/errors.
<code>--lf, --last-failed</code>	rerun failed tests from last run
<code>--ff, --failed-first</code>	same, but then run the rest
<code>--nf, --new-first</code>	run new test files, then the rest

More development speedups

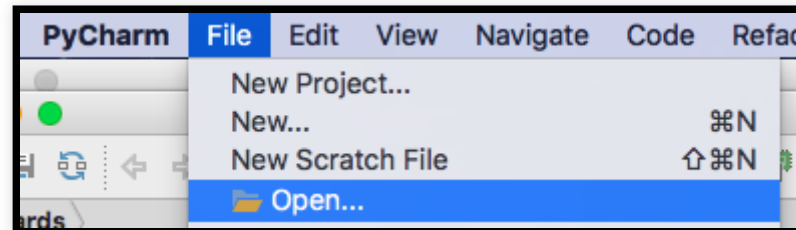
- Fixtures: setup, teardown, resource and test data initialization, ...
- Parametrization: many test cases using the same test function
- Hooks and Plugins: the sky is the limit

PyCharm

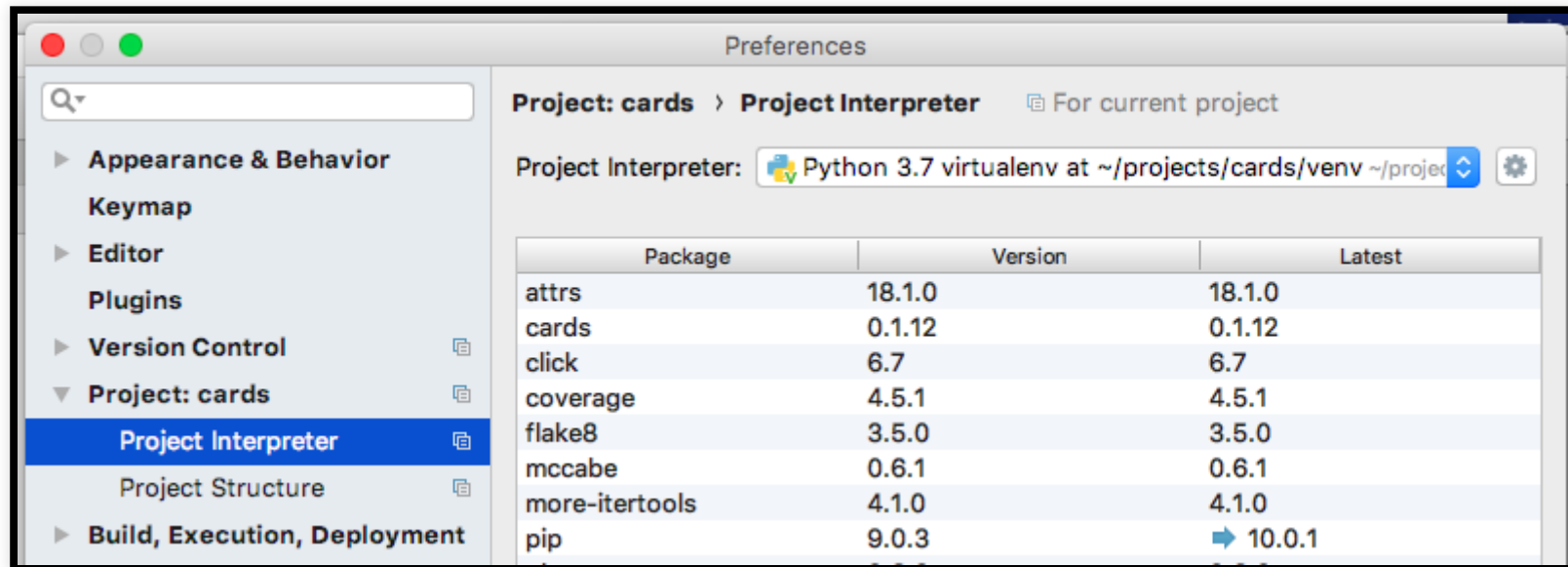
Some Setup

- PyCharm Community edition
- Use File->Open for existing projects
- Check the interpreter setting
- Check the default test runner

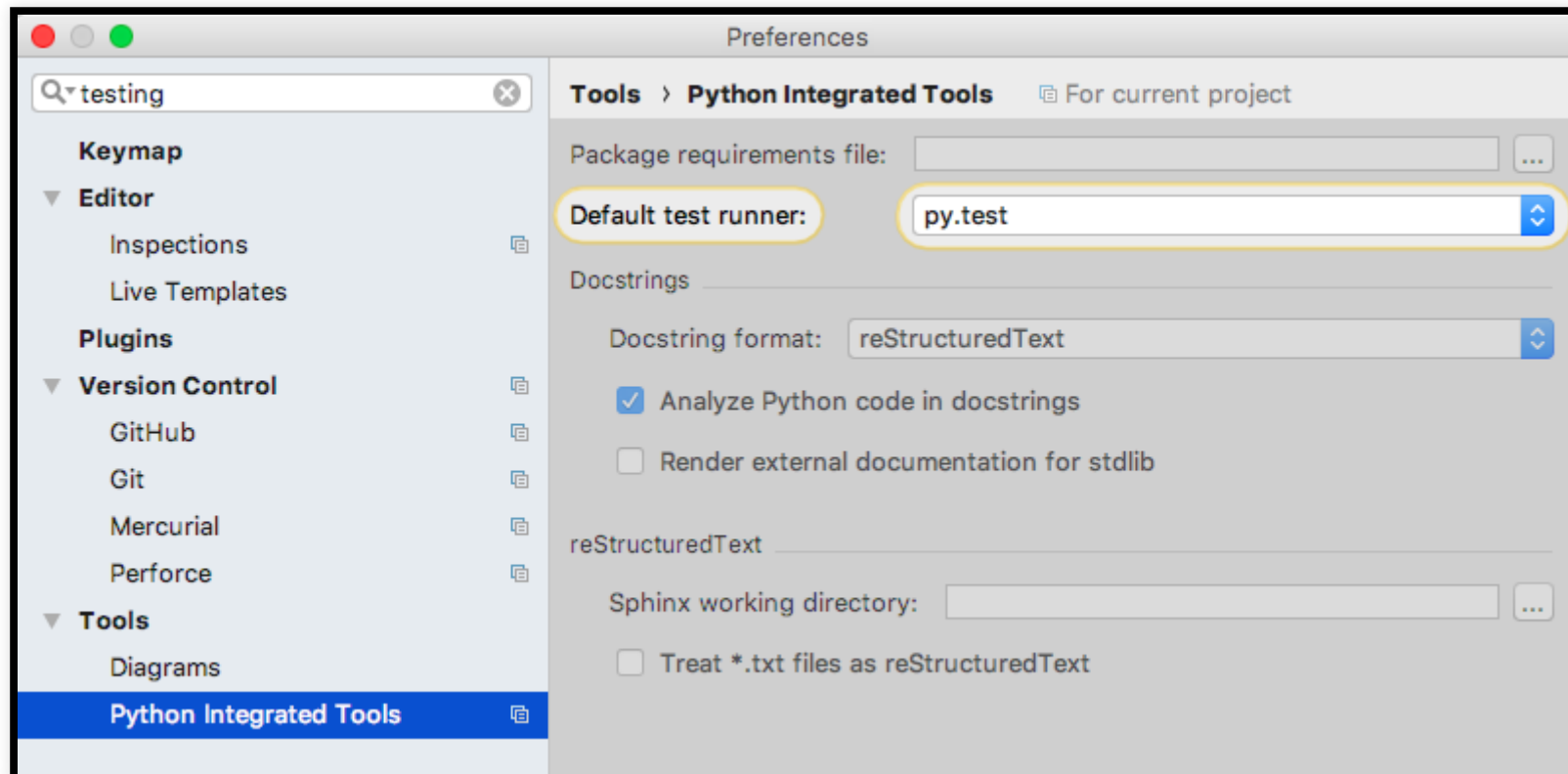
Use File->Open for existing projects



Check the interpreter setting



Check the default test runner



Demo

In the demo

- run at different levels
- see test durations
- auto-running tests
- run only failing tests
- jump directly the test failure
- see tests and code at the same time (TDD mode)
- debug tests and code together
- run REPL during a debug session

The END-ish

More info

- PyCharm
 - <https://www.jetbrains.com/pycharm/>
- Python Testing with pytest
 - <https://pragprog.com/book/bopytest/python-testing-with-pytest>
- pytest
 - <https://docs.pytest.org>
 - <https://stackoverflow.com/search?q=pytest>
- Lessons about testing and TDD from Kent Beck
 - <http://testandcode.com/23>
- booths
- open space session